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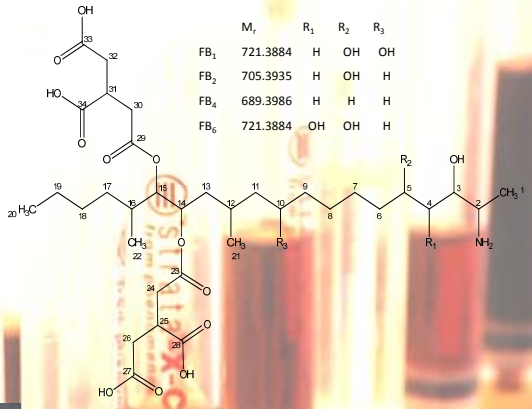
Introduction

Black *Aspergilli* are present on grape clusters from early in the season with increasing frequency during the growth stages of the grapes. Of the various *Aspergillus* species, *A. niger* is by far the most commonly found on grapes and are shown in one study to occur on more than 80% of samples of grapes and derived products. Although *A. niger* is the predominant species, *A. carbonarius* is the most problematic because it consistently produces high amounts of ochratoxin A while only 0-40% of *A. niger* strains produce this toxin, which is the main mycotoxin-related health concern in grape-derived products. The discovery of a fumonisin B_2, B_4 and B_6 production in *Aspergillus niger*, raises concerns about the presence of these mycotoxins in grapes as well as derived products.



	M_r	R_1	R_2	R_3
FB_1	721.3884	H	OH	OH
FB_2	705.3935	H	OH	H
FB_4	689.3986	H	H	H
FB_6	721.3884	OH	OH	H

Worst case

The potential fumonisin production by *A.* niger on grapes and raisins was determined by growth experiments on either commodity for 7 days at 25°C:

Grapes: The production of fumonisin B_2 on grapes varied almost 50 fold from 0.2 to 8 mg/kg while the B_4 varied from 0.01 to 1 mg/kg.

Raisins: Fumonisin B_2 and fumonisin B_4 in raisins with increasing water activity were produced in the range of 229-6476 and 27-356 µg/kg. Raisins with a decreasing water activity had a fumonisin B_2 concentration of 5-784 µg/kg and fumonisin B_4 of 12-672 µg/kg.

Cat-ion exchange purification and LC-MS/MS (2 transitions per compound)

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Analysis of wine

A total of 77 wine samples from 13 countries were analyzed. 18 wine samples (23%) were positive for fumonisin B_2 and contained 1-25 µg/L. Of the 18 positive samples, 16 were red wine, 1 was white wine, and 1 was port wine. As ochratoxin A FB_2 is more frequently found in red wine (28% positive) compared to white wine (7% positive). This was also confirmed by a later study (Logrieco et al 2010)

Analysis of retail raisins

A total of 21 raisin brands collected in Denmark, Germany and The Netherlands were analyzed. In 10 brands (48%), Fumonisins B_2 and B_4 were detected at 1.3-13 and 0.26-1.3 µg/kg, respectively. Large package variations were observed with up to 3-fold differences between four packages of the same brand, indicating a non-homogeneous infection level, which may be due to contaminated raisins.

Conclusion

-Fumonisins are frequently present in grape and derived products. This indicate that *A. niger* is apparently a commonly contaminant of grapes in the fields.

-Although frequently detected the amount of fumonisin is significantly below the regulatory limit set for similar food types (maize)

-The low levels found is presumably due to efficient removal of damaged grapes, initiated after problems with ochratoxin A in grapes and derived products were reported in the late 1990s. This lead to very strict regulations (EC472/2002), including a maximum allowance of 10 µg/kg ochratoxin A in dried vine fruits and 2 µg/kg in wine.

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